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BIBLIOGRAPHIC DIMENSIONS IN INFORMATION CONTROL

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ABSTRACT

The materials of a library, exemplified by books, have traditionally been viewed as presenting two aspects involving two distinct problems: their description and control as unique items, and their treatment as sources of information on various subjects. But this view has tended to overlook a third fundamental aspect: that of the works which are embodied in the materials and in turn embody the information. The paper discusses the meaning of this aspect and its implications in the control of information.

BIBLIOGRAPHIC DIMENSIONS IN INFORMATION CONTROL*

Books and Information

The records of man's thought and experience stored in libraries, mostly though not exclusively in the form of books, have traditionally been viewed as presenting two aspects involving two distinct problems: First, how are they, as concrete entities, to be individually identified and entered in a catalog so that they could readily be found when needed; and Second, how are they, as sources of information on various subjects, to be characterized and related so that they could be found by those in search of the information desired. The first question naturally led to the use of author and title entries alphabetically arranged, thus creating the original "alphabetical catalog" now commonly referred to as the "author-and-title catalog"; and the second question led to the formulation of "subject headings" and the use of subject entries to form a "subject catalog". This situation early gave rise to the issue of which of the two catalogs was more essential to the library user, and the arguments on both sides reverberated loudly at the hearings held by a Royal Commission in London, in 1847-1849, on the alphabetical catalog

*This paper is an outgrowth of discussions between the two authors about the relevance of bibliographic cataloging (on a study of which the first is presently engaged under a grant from the U. S. Office of Education) to the problem of information control (with which the second is particularly concerned). The paper was prepared as part of the work under grant OE-1-7-071089-4284.

designed by Panizzi for the library of the British Museum⁽¹⁾. It was apparent that neither catalog was, alone, quite sufficient, that both catalogs were needed to serve their respective purposes, but that the alphabetical catalog was more urgently needed to serve the elemental function of a library--which is to be able to tell whether or not it has a particular book. As one of the witnesses at the hearings commented: "I think the first object of a catalogue is that persons going to consult it, if they have an accurate knowledge of the title of the book they want, may be able to find it at once in the catalogue . . . But, for those who know not the exact title of a book, it would be very desirable to have it placed [also] under the subject to which it relates and then to refer by a cross-reference to the title of the book."⁽²⁾ Twenty-five years later, Charles Ammi Cutter, viewing the two catalogs as parts of "the catalog as a whole," provided rules for their integration into one "dictionary" catalog;⁽³⁾ but the result appeared as little more than a mere alphabetical interfiling of the author and title entries with the subject entries rather than involving any interrelation between them, and the standard cataloging rules subsequently issued were expressly limited to the entry of publications by author and title as a distinct problem (e.g., Catalog Rules: Author and Title Entries, 1908; A.L.A. Cataloging Rules for Author and Title Entries, 1949). It is quite understandable, therefore, that those concerned with the problem of information should have regarded the problem of "descriptive" cataloging as irrelevant to their purposes and should have taken little notice of the important revision of the cataloging rules which has taken place in the past fifteen years⁽⁴⁾ and has culminated in an International Conference on Cataloging Principles (1961)⁽⁵⁾ and a new code of Anglo-American Cataloging Rules (1967)⁽⁶⁾.

The Book and the Work

But the notion of "cataloging" and "cataloging rules" as concerned merely with the description of the physical book, or record--a notion undoubtedly sustained much too long by the ambiguous term "descriptive cataloging" often used to distinguish it from subject cataloging--has undergone a profound change and has come to assume a character which makes it very pertinent and of increasing importance to the problem of information control.

The essence of the modern concept of cataloging, which might more appropriately be called "bibliographic cataloging," has gradually emerged from a growing realization of the fact that the book (i.e., the material record) and the work (i.e., the intellectual product embodied in it) are not coterminous; that, in cataloging, the medium is not to be taken as synonymous with the message; that the book is actually only one representation of a certain work which may be found in a given library or system of libraries in different media (as books, manuscripts, films, phonorecords, punched and magnetic tapes, braille), different forms (as editions, translations, versions), and even under different titles; that a library user may need a particular edition cited, or may do with any available edition or translation of the work, or may need to know what editions and translations of the work the library has so that he could select the one or ones which would best suit his needs (as earliest, latest, illustrated, well edited, original, or translation in a language he knows); that, to serve all these purposes, a book must be treated not only as a particular publication, but also as the representation of a particular work by a particular author, so that the catalog will reveal to an inquirer not only

whether a particular book is in the library but also what editions and translations of a particular work the library has and what works it has of a particular author; and, finally, that failure to do so will obviously minimize the potential value of the library to its users.

The meaning of the last point is illustrated in the observations of a reviewer commenting on a recent bibliography of translations. In that bibliography, the publications appear to be treated only as such, and not as representations of particular works, with the result that "the same work appears under several titles, for example, Gogol's Sinel which shows up as 'The Cloak,' 'The Greatcoat,' 'The Mantle,' and 'The Overcoat.' . . ." all interfiled alphabetically with other publications representing different works. The reviewer then goes on to consider the consequences: "let us imagine that the user of this bibliography is looking for translations of Chekhov's short story Gore. After having gone through seventeen pages of tightly printed listings, he will have come up with a long list of titles, such as 'Heartache,' 'Misery,' 'Trouble,' 'The Lament,' 'In Trouble,' 'Woe,' 'A Misfortune,' 'A Bad Business,' 'Sorrow,' 'Grief,' etc., each of which might well be a translation of Gore. But he will not know which of these titles actually do represent Gore . . . nor if he has found all of the translations of Gore." (7) An awareness of the distinction between books and the works embodied in them, or of the problems and principles of bibliographic cataloging, would have caused the bibliographer to avoid such consequences.

Author and Work as "Subjects"

The treatment of a publication as the representation of a particular work by a particular author implies three levels of identification--of the

publication itself, of the work represented by it, and of the author of the work. This lends the catalog bibliographic dimensions only sporadically provided by the former cataloging rules. But these dimensions are important not only to the effective control of the books and the works in the library, but also to that of the information contained in them. To illustrate, assume a reader is in search of information about the life and work of Sir Isaac Newton. This reader, in a research library, would reasonably expect to find there both some of Newton's own works and some works about him. He would also be aware, or advised, that some of the editions of Newton's works might include valuable bibliographical, historical, and critical information about him not found elsewhere--that is, that the editions of an author's works are often also valuable sources of information about him. With this in mind, he will undoubtedly want to know both what works of Newton and what works about him the library has. Proceeding now to the author-and-title catalog, he will readily find under Newton, Sir Isaac a list of all of the editions of his works which the library has, including those in which the name Isaac appears as Isaak and Newton as Neuton, because the importance of identifying an author--or other person or corporate body--by one particular name and by only one form of the name has long been recognized and followed in cataloging. By the same token, he will find in the subject catalog, under the same form of name, a list of all the works which the library has about Newton. But if in the course of his study our reader's attention were directed specifically to Newton's Principia and he wanted to see some of the editions of this particular work and some other works about it which the library has, then he would find obstacles in his way, because the identification of a work has not been

recognized and has not been followed under the former cataloging rules (except in certain cases specifically provided--as in the so-called "anonymous classics," e.g., "Bible"). Thus, in returning to the author-and-title catalog, he might or might not find under Newton's name an edition entitled Principia, and in either case he would not discover what editions or translations of this work the library had unless he had the perspicacity and tenacity to examine all the entries under Newton's name. Only then would he have found The First Three Sections of Newton's Principia under F, The Mathematical Principles of Natural Philosophy under M, Philosophiae naturalis principia mathematica under Ph, Principia: The Mathematical Principles of Natural Philosophy under Pr, and The Three First Sections . . . of Newton's Principia under T, interfiled with such unrelated titles as Arithmetica universalis, Interpolation Tables, Lettres inedites, Opticks, Opuscula mathematica, Tables for Renewing and Purchasing Leases, and Universal Arithmetick⁽⁸⁾. (Note also the separation of The First Three Sections of Newton's Principia and The Three First Sections . . . of Newton's Principia, of his Arithmetica universalis and Universal Arithmetick). Under the circumstances, one would rationally be at a complete loss about how to find, in the subject catalog, any materials about this variously named work of Newton. This is, of course, analogous to the situation described by the above-mentioned reviewer in trying to locate the translations of Checkhov's Gore (a situation which, ironically, might well be described by this title including all the connotations of "Trouble" and "Grief"). It is the consequence of failure to recognize the identity of a work which may be embodied in different publications under different titles and to provide appropriately for such identification. Under the new cataloging

rules, all the editions and translations of Newton's Principia would be represented as such, thusly:

Newton, Sir Isaac

[Principia] Philosophiae naturalis principia mathematica . . .

[Principia. English] The mathematical principles of
natural philosophy . . .

[Principia. French] Principes mathématiques de la philosophie
naturelle . . .

[Principia. 1-3] The first three sections of Newton's Principia . .

[Principia. 1-3] The three first sections . . . of Newton's
Principia . . .

Etc.

And, accordingly, the materials about this work would logically be found,
in the subject catalog, under the heading Newton, Sir Isaac. Principia.

Misconceptions of Bibliographic Cataloging

Despite the extensive discussions which accompanied the revision of the former A. L. A. Cataloging Rules and the development of the new Anglo-American Cataloging Rules, the essential character of the new concept of bibliographic cataloging and its implications for the systematic structure and effectiveness of both the author-and-title catalog and the subject catalog remain deplorably malunderstood. Some of those concerned with the problem of information in the library appear incredibly oblivious of the fact that information is found in the library not in any abstract form of "information" as such, but only as embodied in the works represented by books and other materials, and that these materials must therefore necessarily and properly be considered as an organic part of the problem of information. One such individual claims that "The over-emphasis on authorship in our bibliographical apparatus obscures both the fact that

libraries are essentially institutions for the preservation of thought processes and the fact that the value of these thought processes is independent from the form in which they appear and from the individuals who create them."⁽⁹⁾ Apart from the dubious validity of the assertion that the value of "thought processes"--which presumably means ideas or information--does not depend on the reputation of their authors or editors, this writer simply ignores the fact that libraries actually do not deal in any abstract "thought processes," but in records representing the works of men, and it is these records that libraries must buy, preserve, catalog, and make available to their users. Nor does this writer indicate how libraries might tangibly handle "thought processes"--a consideration which led another student of the problem of information to say that the problem "stems, as we know, from the insubstantiality of information, and is not lessened by our obstinate refusal to admit that all we are able to organize are the documents that house the information."⁽¹⁰⁾ Others appear disposed to belittle "cataloging" as a low-level form of indexing. "The methods used in indexing range from the relatively straight-forward system of providing bibliographic data, well described by conventional library rules, to more sophisticated attempts to establish dictionaries and other hierarchical systems which . . . will lead the person to the desired information."⁽¹¹⁾ But as the foregoing and the following may indicate, the bibliographic and subject systems in use represent, not a range of sophistication, but a range of purposes to be served, either of which may be "straight-forward" or "sophisticated" depending on the competence and skill of the practitioner. And most continue to confuse the book with the work and regard the library catalog as merely a list of books, or publications, by author, title, and

subject. Thus one may find in a paper delivered at a recent Institute on the "book catalog"--that is, the catalog printed in book form--that "A catalog should be designed to answer questions as to what books [italics added] are in the library--questions of physical accessibility." (12) Although earlier in that paper the author speaks of "individual works," there is nothing to indicate an awareness of any distinction between the "books" and the "works," or of the implications of such distinction for the functions which the catalog should be designed to serve. Likewise, in the last paper of that Institute, one is told that "Possibly the simplest and most frequent type of library request is that for a particular book or work [italics added] identified by title, author, or other descriptive bibliographic information." (13) The intended synonymy of "book" and "work" is here further confirmed by an inscription, under a key of an illustrated computer console, which reads:

Specific Work

For requesting a specific book, journal, .
or report by means of author, title, publisher,
or other descriptive (non-subject) information. (14)

Nowhere in these papers is there any apparent concern about the work as distinct from the book.

Failure to understand fully the purposes and principles of bibliographic cataloging has also led, more recently, to the notion that use of the computer in the production of the catalog makes the traditional method of cataloging, employing a "main entry," now obsolete. (15) That is, instead of having the cataloger always decide whether the "main entry" for a given publication is to be under author, title, or other heading--a decision requiring knowledge of the cataloging rules and principles as well as

discrimination in their application--a basic entry would simply be made under the title of the publication, and this entry would then automatically be provided by the computer with the indicated author, subject, and other headings to form the desired catalog entries. The idea appears irresistibly attractive and promising of the long yearned-for simplification of bibliographic cataloging--and has indeed been urged on other occasions before⁽¹⁶⁾ and used in some cases⁽¹⁷⁾--but it ignores the basic function of the "main entry" as the nucleus of the catalog.⁽¹⁸⁾ For when the main entry is designed to represent a publication as an edition of a particular work by a particular author, the result is that the added entries under the subject and other added headings will similarly be related; but if the basic entry is to be under the title of the publication, the entries under a given subject heading will be indiscriminately arranged alphabetically by the wording of their titles rather than their intrinsic interrelation. This has already been noted by one library where the idea was adopted⁽¹⁹⁾ and where it was observed that, as a result, one will find under the heading Symphonies, in the subject catalog, not an arrangement of the symphonies by composer and composition (i.e., author and work)--as any rational approach would appear to warrant--but of titles of publications such as Four Complete Symphonies . . . under F, The Great Symphonies of . . . under G, The Nine Symphonies of . . . under N, and then Symphonia . . ., Symphonie . . ., Symphonies . . ., Symphony no. . . ., Symphony in . . ., Symphony of . . ., Symphony on . . ., Synfoni . . ., and other variations of such titles, regardless of the works and the composers represented by them.

Bibliographic Problems in Information Control

The foregoing illustrates the relevance of the problems and principles of bibliographic cataloging to those of information control. There is,

however, at least one important method of information control whose problems are entirely the same as those of bibliographic cataloging. This is the method which employs authors and works symbolically as "subject headings" to designate the subject fields or ideas represented by them and to relate the sources in which the authors and the works are cited--as is done in the Science Citation Index. Here, as is explained, "The searcher starts with a reference or an author he has identified . . . then enters the Citation Index section and searches for that particular author's name [italics added]. When he locates the author's name, he then checks to see which of several possible references fits the particular one that he is interested in. Under the year, journal, volume and page number of this particular reference, he then looks to see who has currently cited this particular work"⁽²⁰⁾ [italics added]. But if the Index is to be a dependable and effective guide to the sources in which a "particular author" or a "particular work" is cited, then obviously the authors and works listed in it must be adequately and unambiguously identified--as they are required to be in bibliographic cataloging. But are they so treated in the Index? One might assume from the foregoing quotation emphasizing "that particular author's name" and "this particular work" that this was the intention; but if that was the case, the methodology adopted here was ill calculated to accomplish the desired ends. The identification of an author by the surname and initials cited is inevitably bound to separate references to the same author, when he is variantly cited, and to confuse references to different authors having the same surname and initials; and identification of a work by the source in which it appeared is inevitably bound to separate references to a work which appeared, with or without modifications, in more than one

source. The combination of the two factors scarcely promises to make the pursuit of sources related to a "particular author" or a "particular work"--the declared objectives of the Index--a successful experience.

To confirm this conclusion, a member of the research staff of the University of California Institute of Library Research, Mrs. Nancy Brault, was asked to verify some names and citations of the Science Citation Index. Picking up a copy of the 1966 cumulation, she turned to the name Gibbs as a name which is neither very common (like Smith) nor very uncommon, and from the citations found in columns 7105-7109 she selected the names Gibbs (without initials), Gibbs A, Gibbs A J, Gibbs C J, Gibbs F, Gibbs F A, and Gibbs J W. She then went to some of the sources cited for a more adequate identification of the authors and their works, and returned with the following telling results:

1. Two of the works cited under Gibbs (without initials) belong to two different authors. The author of 65-J Chem Phys 43 139 will be found to be Julian H. Gibbs, who is listed also under Gibbs J H as author of 54-J Chem Phys 22 1460, 55-J Phys Chem 59 644, 58-J Chem Phys 28 373, and others; and the author of 76-T Connecticut Acad 3 343 will be found to be Josiah Willard Gibbs, who is listed also as Gibbs J W where the same item and other items are cited (see below).

2. Gibbs A the author of 53-Parasitology 43 143 will be found to be Alfred J. Gibbs, who is listed also under Gibbs A J as author of 59-Parasitology 49 411; at the same time it will be found that other items listed under each of these two names belong to different authors, active in different fields, and associated with different institutions.

3. Gibbs C J author of 65-J Water PC 37 1417 will be found to be Charles V Gibbs, not C J Gibbs. A misprint or error in the citing article J Water PC 38 685 entailed a misplacement of this author and his confusion with other authors. At the same time, there is nothing under Gibbs C V where one would look for him.

4. Gibbs F and Gibbs F A will be found to be the same author, Frederic Andrews Gibbs. Some items will be found under one name, some under the other, and some under both of these names; in addition, some items will be found represented, under one or both of these names, under as many as 4 and 6 variant citations (e.g., 50-Atlas Electroencepha, 50-Atals [!] Electroencepha 1, 50-Atlas EEG 1, and 50-Atlas Electroencepha 1 under Gibbs F A, all referring to the author's Atlas of Electroencephalography, 2nd edition, vol. 1, published in 1950; 64-Atlas EEG, 64-Atlas Electroencepha 3, under Gibbs F, and Atlas 3, 64-Atlas EEG 3, 64-Atlas Electroencepha 2 [i.e., 3], and 64-Atlas Electroencepha 3, under Gibbs F A, all six referring to vol. 3 of the above work published in 1964.)

5. Gibbs J W will be found to be Josiah Willard Gibbs who, as already noted before, is one of the authors listed also under Gibbs (without initials). The principal interest in this case, however, is the fact that the entries under this name illustrate how reproductions of a "particular work," identified as they are in the Index by source of publication, may appear in it as so many different works. J. W. Gibbs' writings, which first appeared in scientific periodicals, were later collected and republished in 1906 and 1961 under the title The Scientific Papers of J. Willard Gibbs, and in 1928, 1948, and 1957 under the title The Collected

Works of J. Willard Gibbs. Any one of the author's papers may therefore be cited as found in any or all of these sources without indication that they represent the same work. Thus his paper "On the Equilibrium of Heterogeneous Substances" will be found cited as Collected Works 1 300, 06-Scientific Papers 1 219, 28-Collected Works 1 219, 48-Collected Works 1 219, 75-Conn Acad Sci T 3 108, 75-T Connecticut Acad 3 108, 76-T Conn Acad 3 108, and so on. One will also note that here, as in the foregoing paragraph, variations in the citation of the source (Conn Acad Sci T, T Connecticut Acad, T Conn Acad) serve further to separate the references and cap the confusion. If these conditions, found in a small sampling of entries, under a few ordinary names, in the space of not more than four columns of only one year's cumulation, are any indication of the bibliographic conditions obtaining generally in the Index, it is difficult to see how a person interested in the subject field or the ideas represented by a certain author or certain work can effectively use the Index to locate the sources related to "that particular author" or "this particular work." Perhaps even more significant would be the effects of these conditions upon studies which by their nature, depend upon the identification of "particular works by particular authors," such as the use of citations to identify families of papers. (21) (22)

This is not intended, and is not to be construed, as a criticism of the Science Citation Index--a valiant and useful undertaking where economic and other practical considerations dictate a course of action not conducive to ideal results. It is adduced, however, as a prime example of an important method of subject or information control, the problems of which are entirely the same as those of bibliographic cataloging and therefore ones that could benefit from the solutions evolved in bibliographic cataloging.

Epitome

The "information" found in the materials of a library is not in the form of nuggets that can be collected, sorted, and labeled in isolation. Rather, it is part of the collective work and thought of men, and of the fabric of the particular works in which it is found. It is pertinent, therefore, that in organizing this information cognizance should be taken of the authors who created it, the particular works of which it is an organic part, and the materials embodying these works. Together, the authors, the works, and the materials, may be said to constitute the determinant dimensions of the information found in bibliographical sources.

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